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IS 11765 (1986): Method for determination of titratable acidity in milk powder and similar products (reference method) [FAD 19: Dairy Products and Equipment]

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UDC 637·143 : 543·257·1

IS : 11765 - 1986
ISO 6091 - 1980

Indian Standard

(Reaffirmed 2003)

"RE-AFFIRMED

METHOD FOR DETERMINATION OF TITRATABLE ACIDITY IN MILK POWDER AND SIMILAR PRODUCTS (REFERENCE METHOD)

[ISO Title : Dried Milk — Determination of Titratable Acidity (Reference Method)]

Dairy Products Sectional Committee, AFDC 34 [Ref : Doc: AFDC 34 (2719)]

National Foreword

This Indian Standard which is identical with ISO 6091 - 1980 'Dried milk — Determination of titratable acidity (Reference method)', issued by the International Organization for Standardization (ISO), was adopted by the Indian Standards Institution on the recommendation of the Dairy Products Sectional Committee and approval of the Agricultural and Food Products Division Council.

In the adopted standard, certain terminology and conventions are not identical with those used in Indian Standards; attention is particulary drawn to the following:

a) Wherever the words 'International Standard' appear, referring to this standard, they should be read as 'Indian Standard'; and

b) Comma (,) has been used as decimal marker while in Indian Standards, tha current practice is to use point (.) as the decimal marker.

Cross References

International Standard	*Corresponding Indian Standard*
ISO 707 - 1985 Milk and milk products — Sampling	IS : 11546 - 1985 Methods of sampling of milk and milk products (Identical)
ISO/R 1736 Dried milk — Determination of fat content (Reference method)	IS : 11721 - 1986 Method for determination of fat content in milk powder and similar products (Reference method) (Identical)

In reporting the result of a test or analysis made in accordance with the standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2 - 1960 'Rules for rounding off numerical values (*revised*)'.

Adopted 19 May 1986	© September 1987, BIS	Gr 2

B U R E A U O F I N D I A N S T A N D A R D S
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1 Scope and field of application

This International Standard specifies a reference method for the determination of the titratable acidity of all types of dried milk.

2 References

ISO/R 707, *Milk and milk products — Sampling.*

ISO/R 1736, *Dried milk — Determination of fat content (Reference method).*

3 Definition

titratable acidity of dried milk : The number of millilitres of 0,1 mol/l sodium hydroxide solution required to titrate a quantity of the reconstituted milk corresponding to 10 g of solids-not-fat to the pH of 8,40.

4 Principle

Preparation of reconstituted milk by addition of water to a test portion of dried milk corresponding accurately to 5 g of solids-not-fat. Titration with 0,1 mol/l sodium hydroxide solution to the pH of 8,40. Multiplication of the number of millilitres used in the titration by the factor 2, in order to obtain the number of millilitres in terms of 10 g of solids-not-fat.

The amount of sodium hydroxide solution required is a function of the amount of natural buffering substances present in the product, and of developed or added acid or alkaline substances.

5 Reagent and material

All reagents shall be of recognized analytical quality. Water shall be distilled or deionized water, freed from carbon dioxide by boiling for 10 min before use.

5.1 Sodium hydroxide, standard volumetric solution, $c(\text{NaOH}) = 0{,}1 \pm 0{,}000\,2$ mol/l[1], carbonate free.

Protect this solution against absorption of carbon dioxide.

5.2 Nitrogen.

6 Apparatus

6.1 Analytical balance.

6.2 pH meter, with slope control, capable of being read to 0,01 pH unit, with a glass measuring electrode and a suitable reference electrode, calibrated using two buffer solutions of pH approximately 7 and 9 respectively, known to within ± 0,01 pH unit.

6.3 Magnetic stirrer.

6.4 Burette, graduated in 0,1 ml and with an accuracy of 0,05 ml.

6.5 Measuring cylinder, of capacity 50 ml.

6.6 Conical flask, of capacity 100 ml or 150 ml, with a ground neck and ground glass stopper. The neck shall be sufficiently wide to accommodate the two electrodes, the burette tip and the nitrogen line.

7 Sampling

See ISO/R 707.

8 Procedure

8.1 Preparation of the test sample

Transfer the sample to a clean, dry container (provided with an air-tight lid) of a capacity about twice the volume of the sample.

Close the container immediately and thoroughly mix the contents by repeatedly shaking and inverting the container. During these operations, exposure of the sample to the atmosphere should be avoided as far as possible, to minimize absorption of water.

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[1] Hitherto expressed as "0,1 ± 0,000 2 N *standard volumetric solution*".

8.2 Test portion

Weigh $(500/a) \pm 0{,}01$ g of the test sample(8.1) into the conical flask (6.6), a being the solids-not-fat content of the sample, expressed as a percentage by mass.

NOTE — The solids-not-fat content of the sample may be calculated by subtracting the fat content (determined in accordance with ISO/R 1736) and the moisture content[1] from 100.

8.3 Determination

8.3.1 Prepare reconstituted milk by adding 50 ml of water at about 20 °C to the test portion (8.2), and agitating vigorously. Allow to stand for about 20 min.

8.3.2 Titrate the contents of the conical flask by adding the sodium hydroxide solution (5.1) from the burette (6.4) until the pH, measured by means of the pH meter (6.2), persists for about 5 s at 8,40; during the titration, the solution should be stirred using the magnetic stirrer (6.3), and absorption of carbon dioxide from the air should be avoided by flushing the conical flask with the nitrogen (5.2). The titration should be completed within 1 min.

Record the volume, in millilitres, of sodium hydroxide solution used, to the nearest 0,05 ml.

9 Expression of results

9.1 Method of calculation and formula

The titratable acidity is equal to

$$2 \times V$$

where V is the volume, in millilitres, of the sodium hydroxide solution (5.1) used for the titration (8.3.2).

Express the result to one decimal place.

9.2 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst shall not exceed 0,4 ml of 0,1 mol/l sodium hydroxide solution per 10 g of solids-not-fat.

10 Test report

The test report shall show the method used and the result obtained. It shall also mention any operating conditions not specified in this International Standard, or regarded as optional, as well as any circumstances that may have influenced the result.

The report shall include all details required for the complete identification of the sample.

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[1] A method for the determination of moisture content is specified in IDF Standard No. 26, *Determination of the water content of dried milk*, which is currently under revision by a joint ISO/IDF/AOAC group of experts.

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